FIG. 1

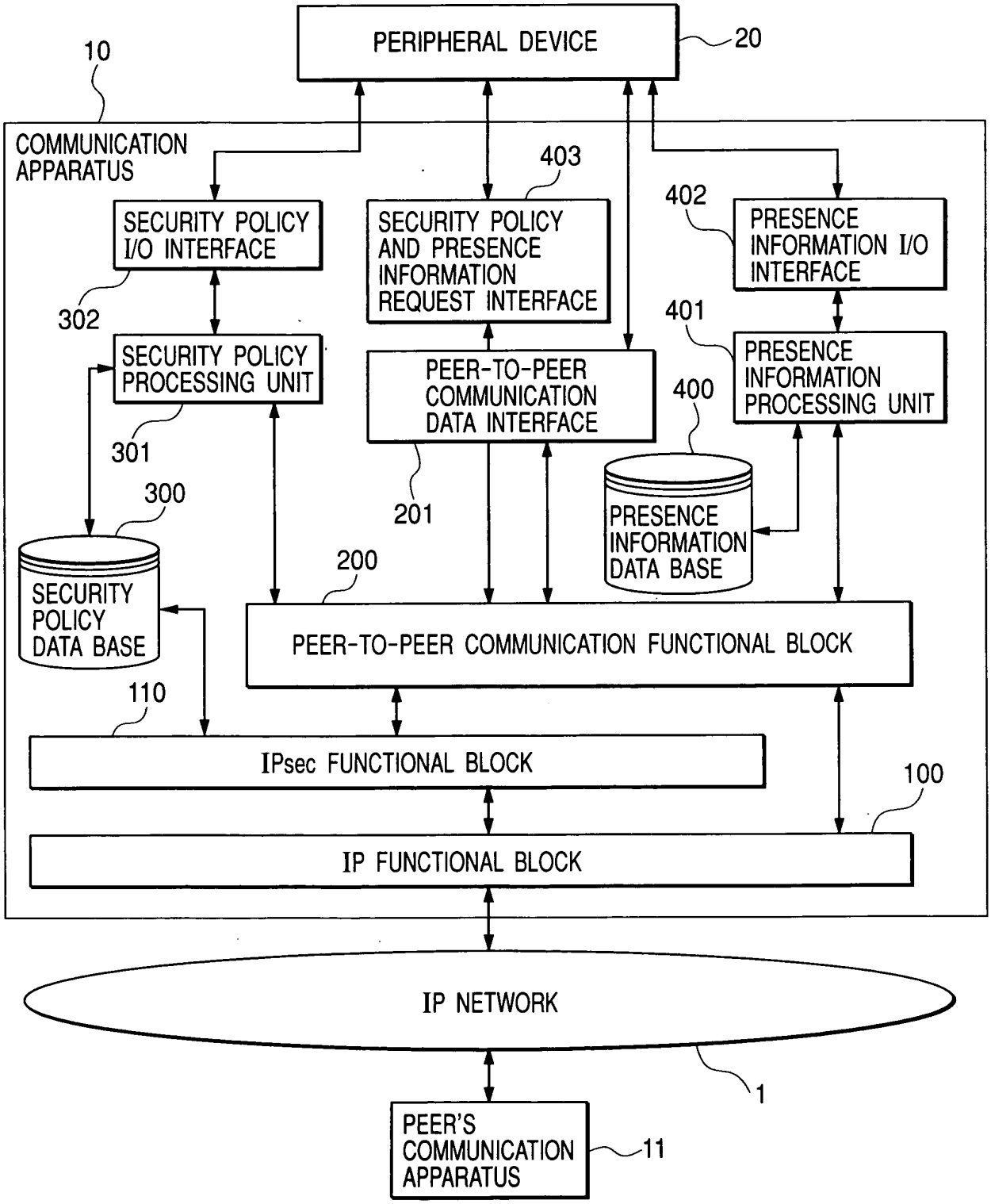

PERIPHERAL DEVICE
20
10
COMMUNICATION APPARATUS
403
SECURITY POLICY I/O INTERFACE
SECURITY POLICY AND PRESENCE INFORMATION REQUEST INTERFACE
402
PRESENCE INFORMATION I/O INTERFACE
302
401
SECURITY POLICY PROCESSING UNIT
PEER-TO-PEER COMMUNICATION DATA INTERFACE
PRESENCE INFORMATION PROCESSING UNIT
400
301
300
201
PRESENCE INFORMATION DATA BASE
SECURITY POLICY DATA BASE
200
PEER-TO-PEER COMMUNICATION FUNCTIONAL BLOCK
110
IPsec FUNCTIONAL BLOCK
100
IP FUNCTIONAL BLOCK
IP NETWORK
1
PEER'S COMMUNICATION APPARATUS
11

FIG. 2

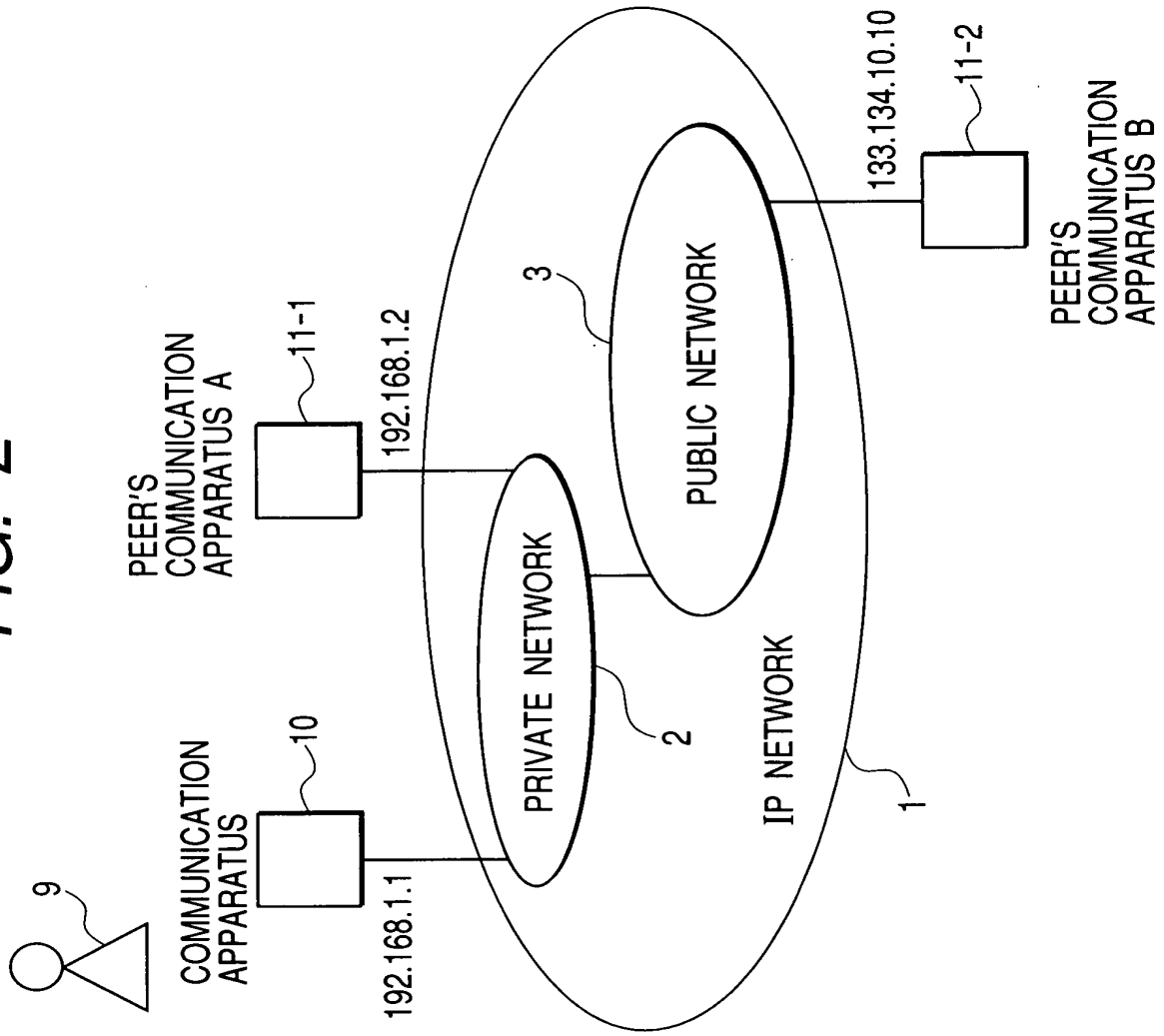

9
COMMUNICATION APPARATUS
10
192.168.1.1
PEER'S COMMUNICATION APPARATUS A
11-1
192.168.1.2
PRIVATE NETWORK
2
3
PUBLIC NETWORK
IP NETWORK
1
133.134.10.10
11-2
PEER'S COMMUNICATION APPARATUS B

FIG. 3

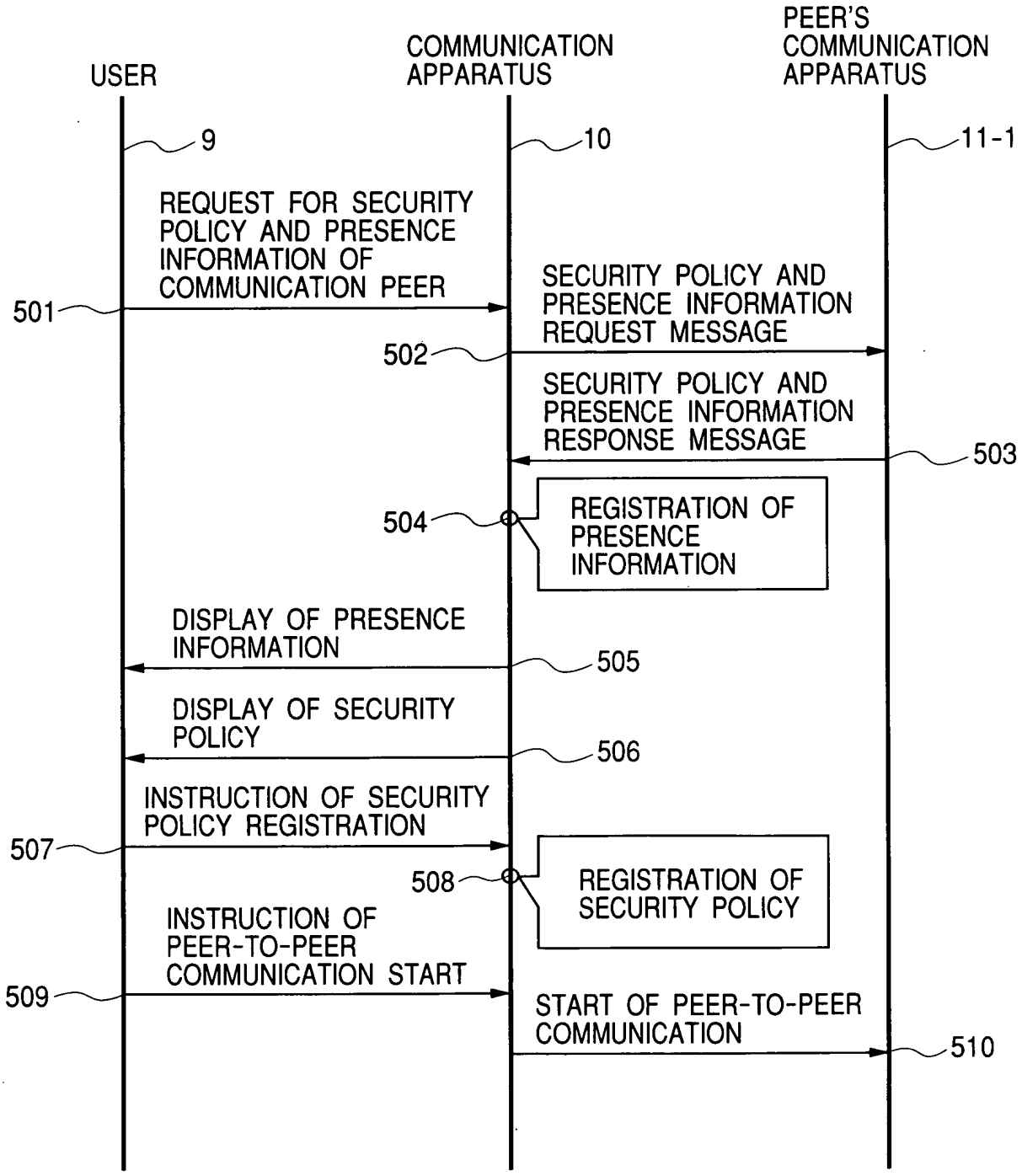

USER
COMMUNICATION APPARATUS
PEER'S COMMUNICATION APPARATUS
9
10
11-1
REQUEST FOR SECURITY POLICY AND PRESENCE INFORMATION OF COMMUNICATION PEER
501
SECURITY POLICY AND PRESENCE INFORMATION REQUEST MESSAGE
502
SECURITY POLICY AND PRESENCE INFORMATION RESPONSE MESSAGE
503
504
REGISTRATION OF PRESENCE INFORMATION
DISPLAY OF PRESENCE INFORMATION
505
DISPLAY OF SECURITY POLICY
506
INSTRUCTION OF SECURITY POLICY REGISTRATION
507
508
REGISTRATION OF SECURITY POLICY
INSTRUCTION OF PEER-TO-PEER COMMUNICATION START
509
START OF PEER-TO-PEER COMMUNICATION
510

FIG. 4

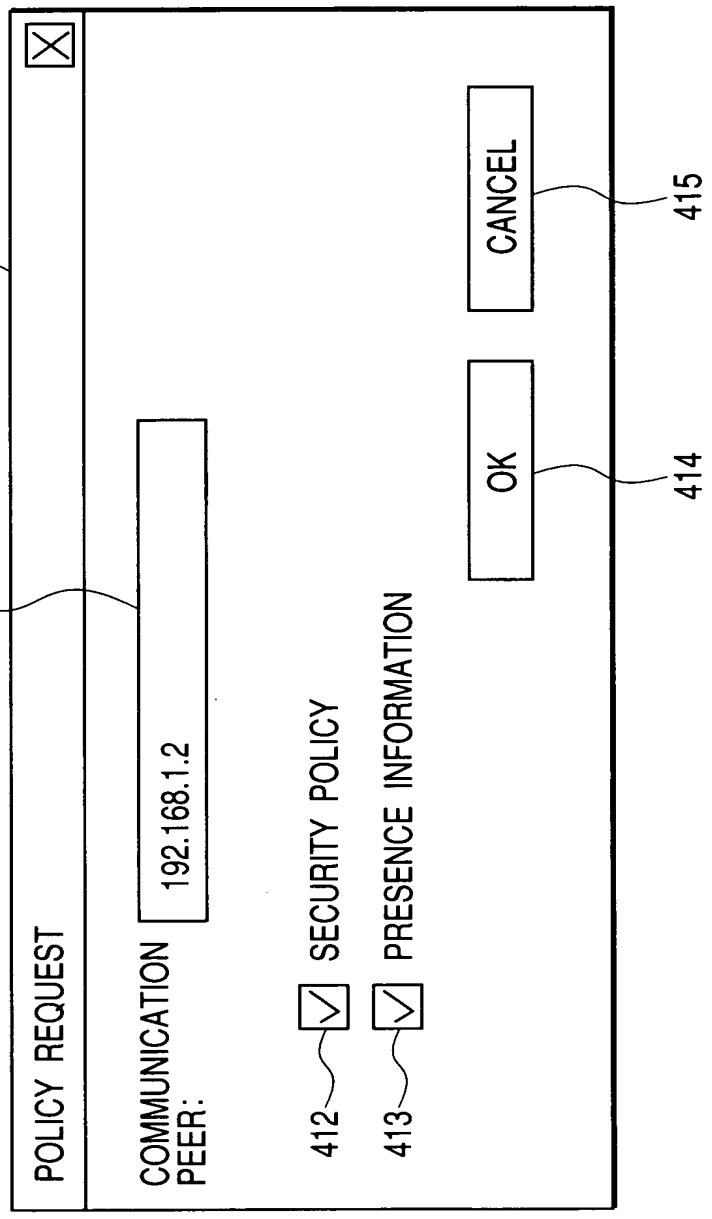

410
411
POLICY REQUEST
COMMUNICATION PEER:
192.168.1.2
412
SECURITY POLICY
413
PRESENCE INFORMATION
OK
414
CANCEL
415

FIG. 5

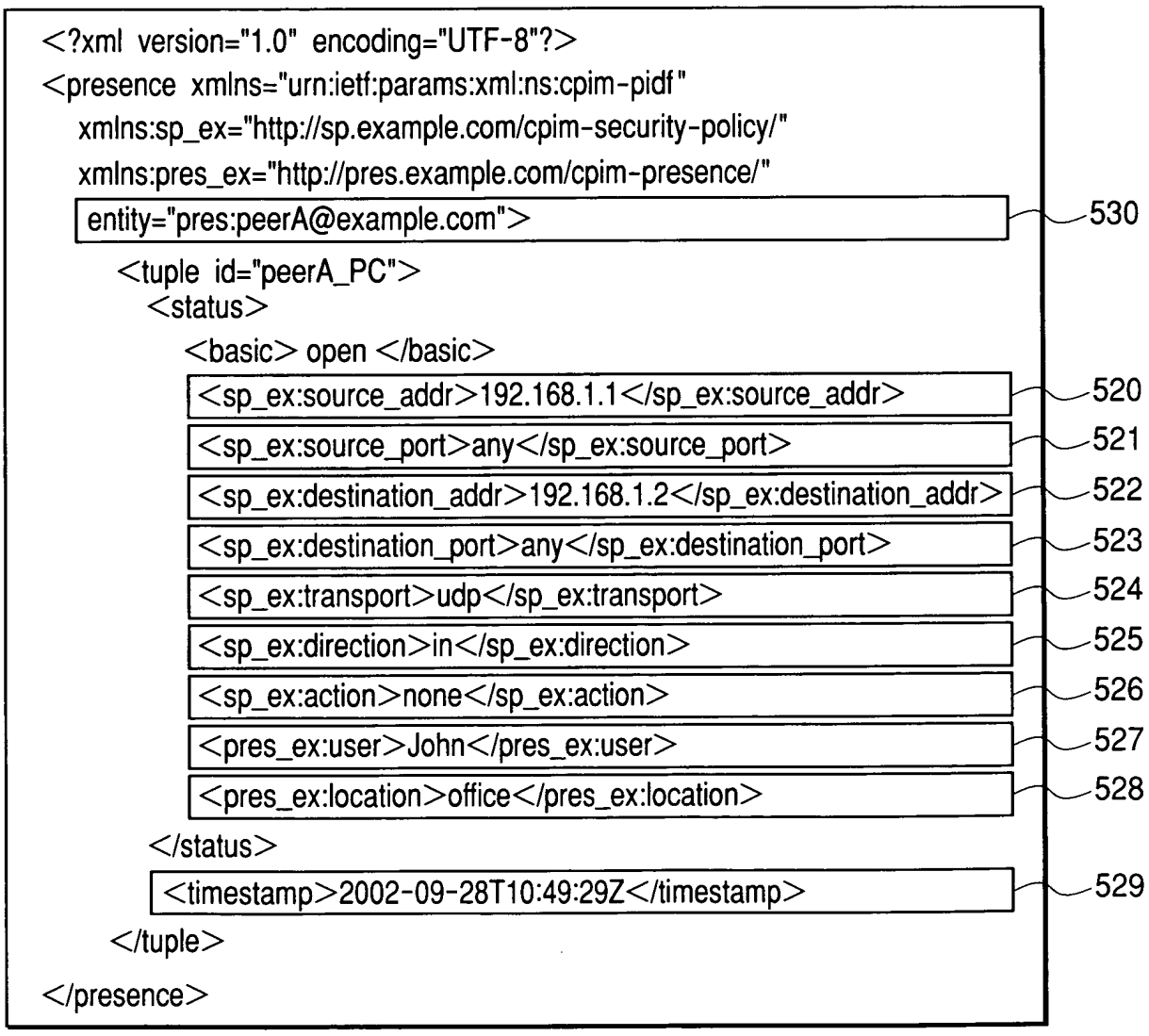

<?xml version="1.0" encoding="UTF-8"?>
<presence xmlns="urn:ietf:params:xml:ns:cpim-pidf"
xmlns:sp_ex="http://sp.example.com/cpim-security-policy/"
xmlns:pres_ex="http://pres.example.com/cpim-presence/"
entity="pres:peerA@example.com">
530
<tuple id="peerA_PC">
<status>
<basic> open </basic>
<sp_ex:source_addr>192.168.1.1</sp_ex:source_addr>
520
<sp_ex:source_port>any</sp_ex:source_port>
521
<sp_ex:destination_addr>192.168.1.2</sp_ex:destination_addr>
522
<sp_ex:destination_port>any</sp_ex:destination_port>
523
<sp_ex:transport>udp</sp_ex:transport>
524
<sp_ex:direction>in</sp_ex:direction>
525
<sp_ex:action>none</sp_ex:action>
526
<pres_ex:user>John</pres_ex:user>
527
<pres_ex:location>office</pres_ex:location>
528
</status>
<timestamp>2002-09-28T10:49:29Z</timestamp>
529
</tuple>
</presence>

FIG. 6

PRESENCE INFORMATION DATA BASE 400

600-1

620 ENTITY	621 IP ADDRESS	622 USER NAME	623 LOCATION	624 TIME
peerA@example.com	196.128.1.2	John	office	2002-09-28 10:49:29
•••	•••	•••	•••	•••

FIG. 7

SECURITY POLICY DATA BASE 300

720

710 SOURCE IP ADDRESS	711 SOURCE PORT NO.	712 DESTINATION IP ADDRESS	713 DESTINATION PORT NO.	714 TRANSPORT LAYER PROTOCOL	715 DIRECTION	716 ACTION	717 PROTOCOL	718 MODE	719 END POINT	LEVEL
192.168.1.1	any	192.168.1.2	any	udp	out	none	—	—	—	—
...	...	...	...	...	...	...	...	...	...	...

300-1

FIG. 8

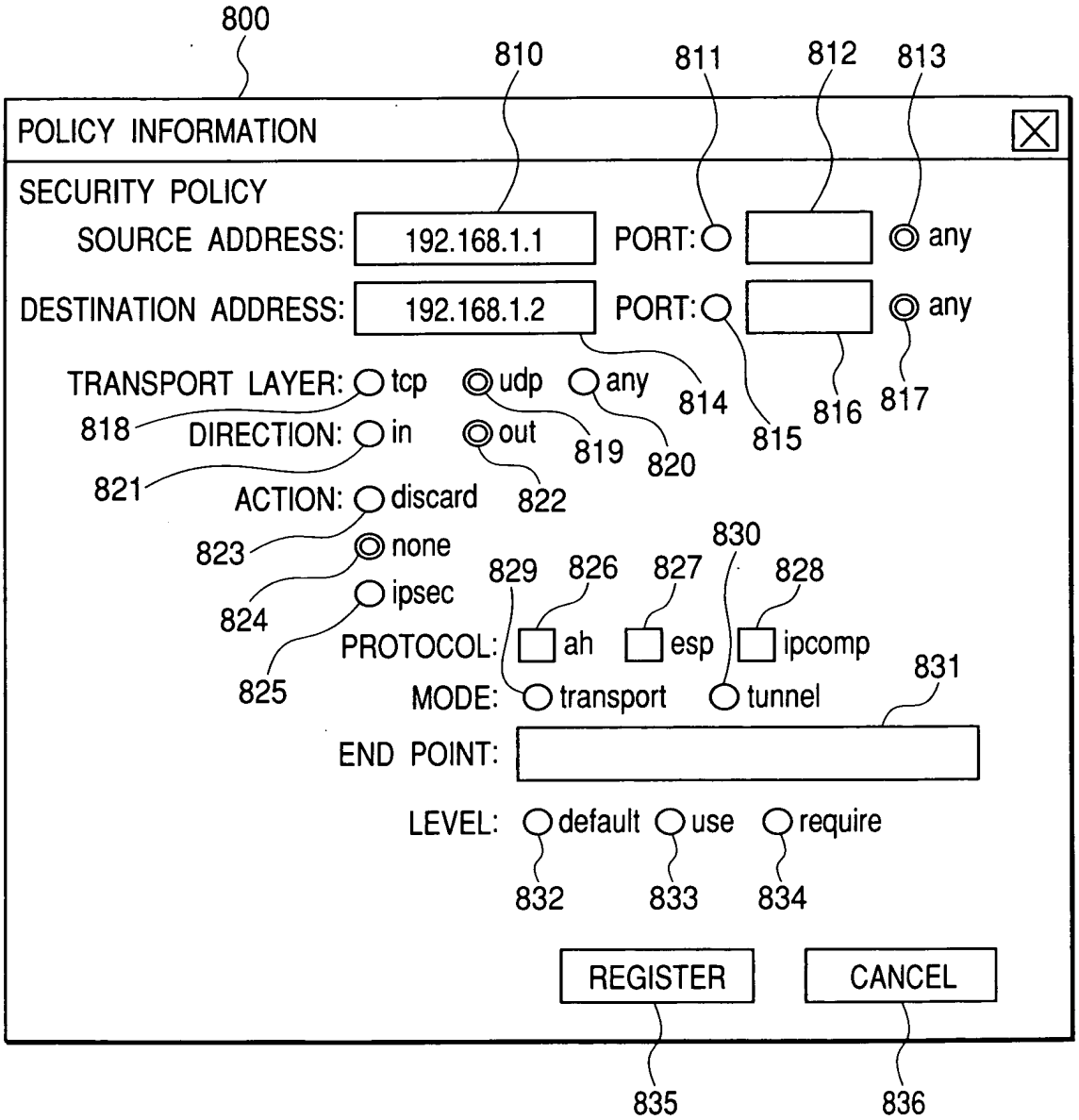

800
810
811
812
813
POLICY INFORMATION
SECURITY POLICY
SOURCE ADDRESS:
192.168.1.1
PORT:
any
DESTINATION ADDRESS:
192.168.1.2
PORT:
any
TRANSPORT LAYER:
tcp
udp
any
DIRECTION:
in
out
ACTION:
discard
none
ipsec
PROTOCOL:
ah
esp
ipcomp
MODE:
transport
tunnel
END POINT:
LEVEL:
default
use
require
REGISTER
CANCEL
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836

FIG. 9

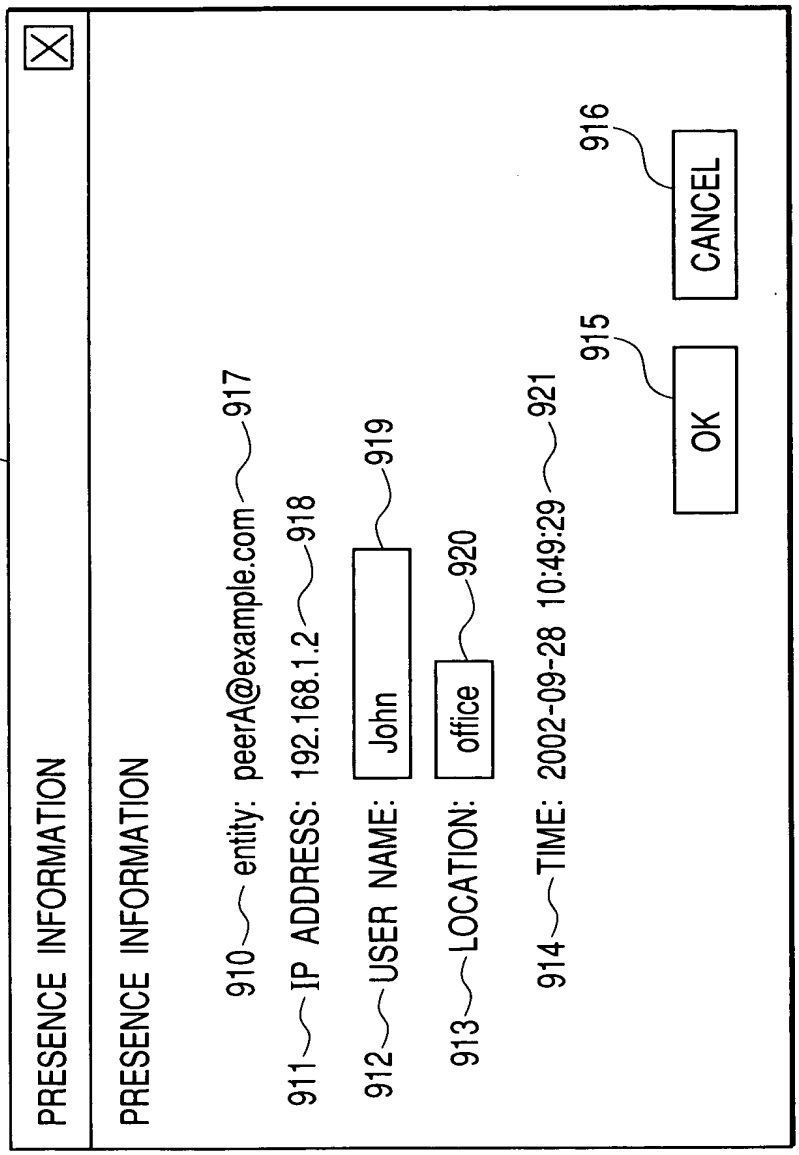

900
PRESENCE INFORMATION
PRESENCE INFORMATION
910 entity: peerA@example.com 917
911 IP ADDRESS: 192.168.1.2 918
912 USER NAME: John 919
913 LOCATION: office 920
914 TIME: 2002-09-28 10:49:29 921
915
OK
916
CANCEL

FIG. 10

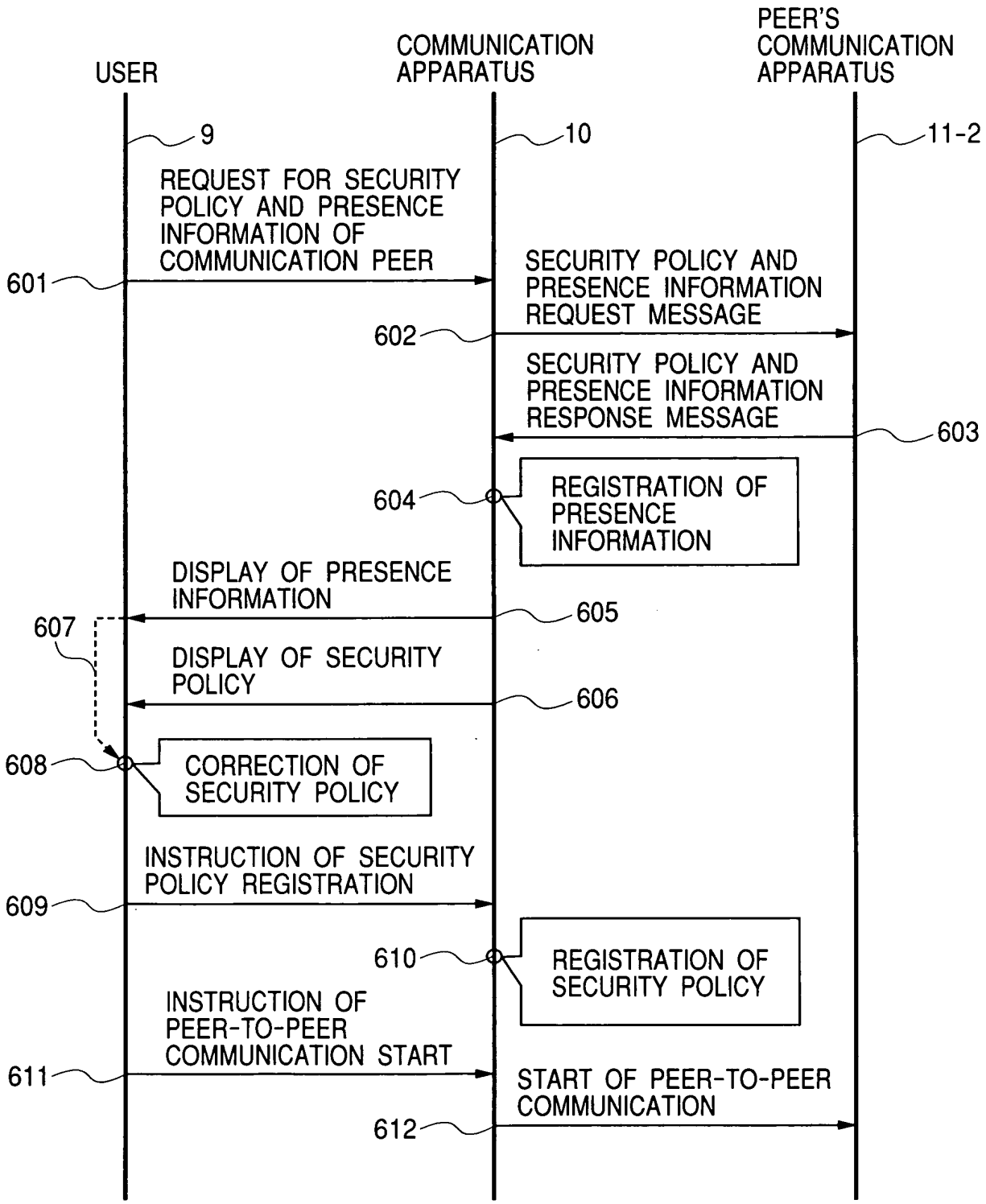

USER
COMMUNICATION APPARATUS
PEER'S COMMUNICATION APPARATUS
9
10
11-2
REQUEST FOR SECURITY POLICY AND PRESENCE INFORMATION OF COMMUNICATION PEER
601
SECURITY POLICY AND PRESENCE INFORMATION REQUEST MESSAGE
602
SECURITY POLICY AND PRESENCE INFORMATION RESPONSE MESSAGE
603
604
REGISTRATION OF PRESENCE INFORMATION
DISPLAY OF PRESENCE INFORMATION
605
607
DISPLAY OF SECURITY POLICY
606
608
CORRECTION OF SECURITY POLICY
INSTRUCTION OF SECURITY POLICY REGISTRATION
609
610
REGISTRATION OF SECURITY POLICY
INSTRUCTION OF PEER-TO-PEER COMMUNICATION START
611
START OF PEER-TO-PEER COMMUNICATION
612

FIG. 11

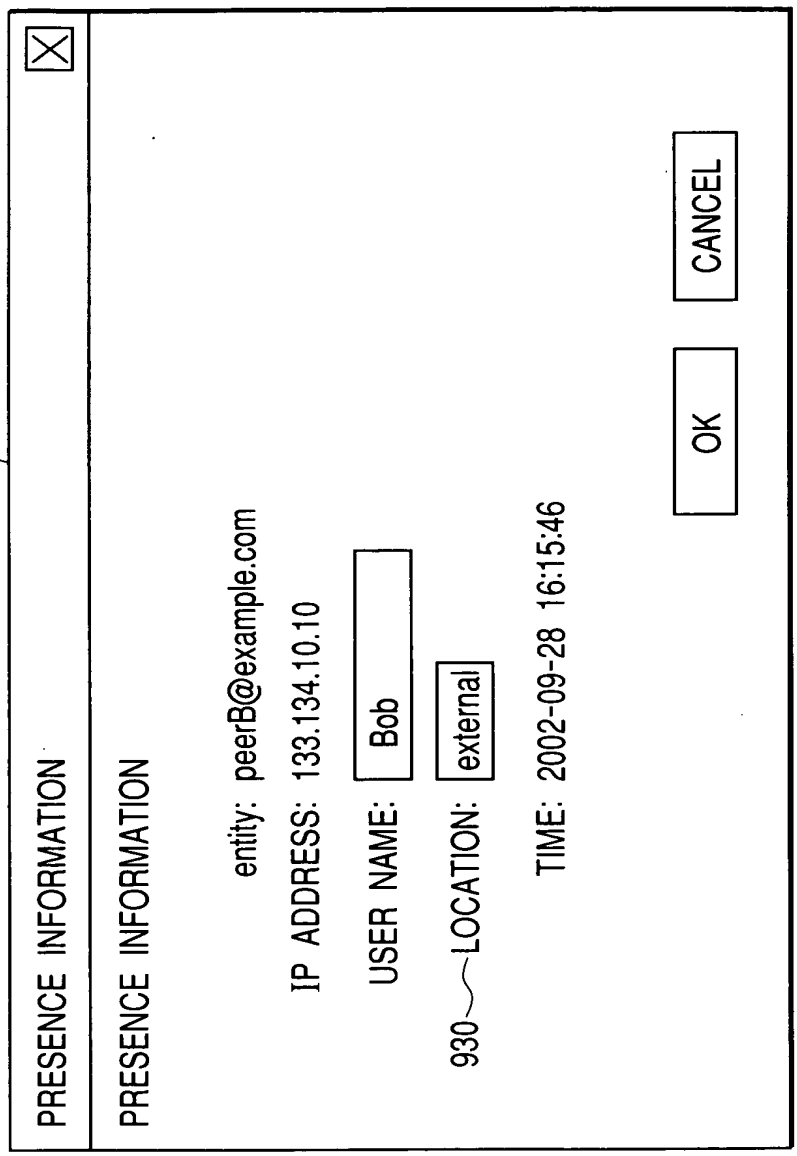

1100
PRESENCE INFORMATION
PRESENCE INFORMATION
entity: peerB@example.com
IP ADDRESS: 133.134.10.10
USER NAME: Bob
930 LOCATION: external
TIME: 2002-09-28 16:15:46
OK
CANCEL

FIG. 12

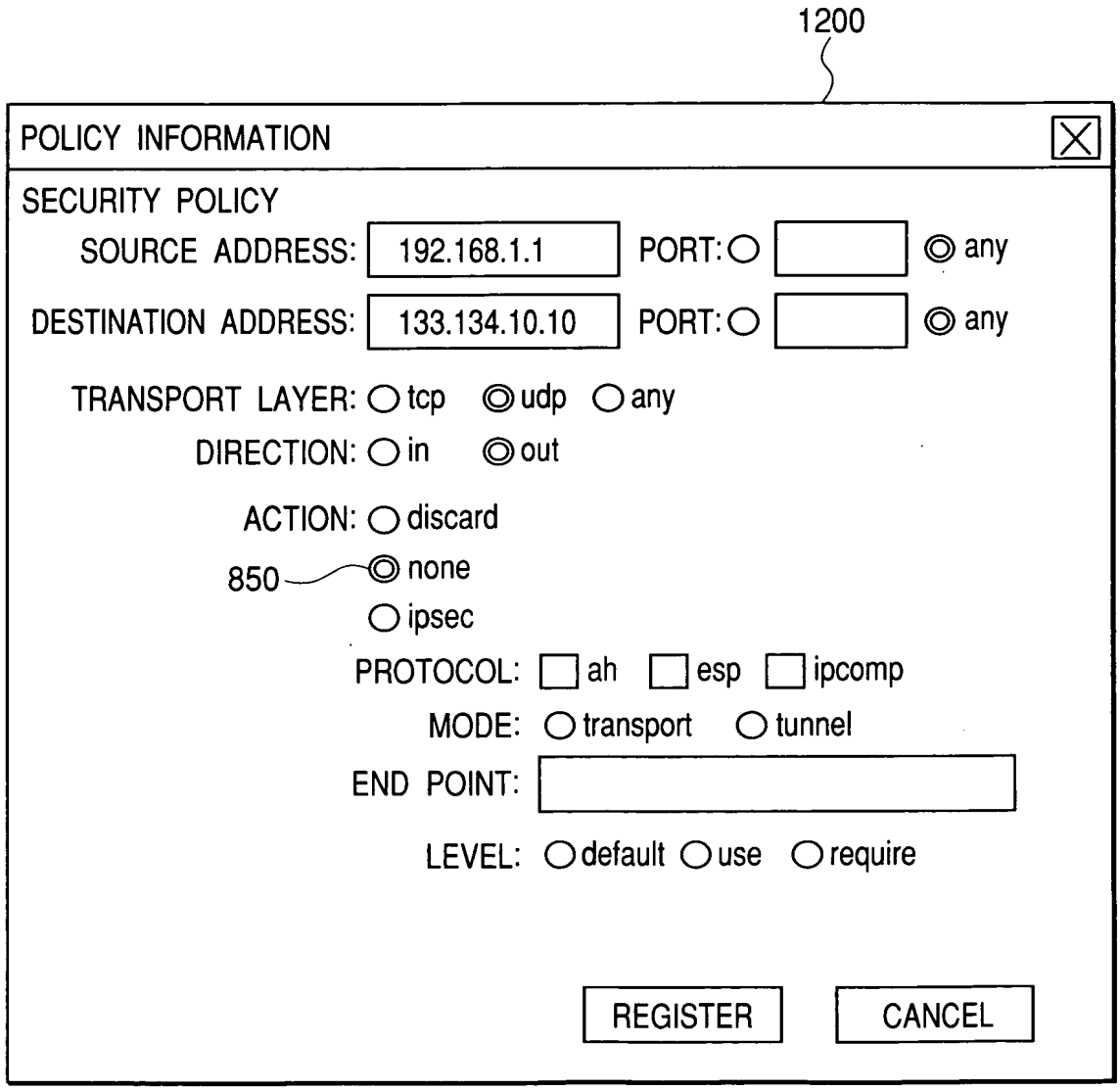
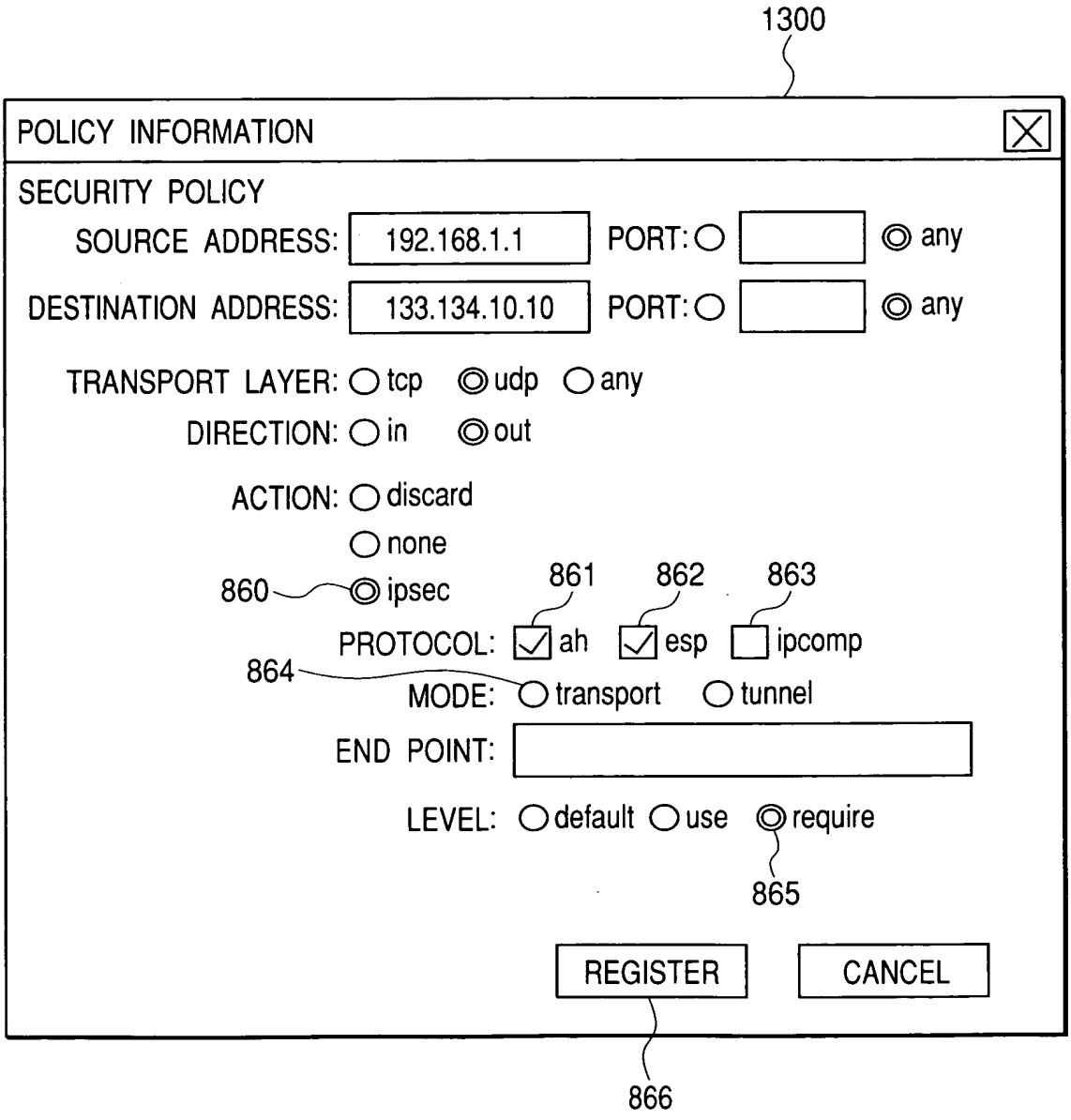

1200
POLICY INFORMATION
SECURITY POLICY
SOURCE ADDRESS: 192.168.1.1
PORT: any
DESTINATION ADDRESS: 133.134.10.10
PORT: any
TRANSPORT LAYER: tcp udp any
DIRECTION: in out
ACTION: discard
850
none
ipsec
PROTOCOL: ah esp ipcomp
MODE: transport tunnel
END POINT:
LEVEL: default use require
REGISTER
CANCEL

FIG. 13


1300
POLICY INFORMATION
SECURITY POLICY
SOURCE ADDRESS: 192.168.1.1
PORT: any
DESTINATION ADDRESS: 133.134.10.10
PORT: any
TRANSPORT LAYER: tcp udp any
DIRECTION: in out
ACTION: discard
none
860
ipsec
861
862
863
PROTOCOL: ah esp ipcomp
864
MODE: transport tunnel
END POINT:
LEVEL: default use require
865
REGISTER
CANCEL
866